DOCUMENT RESUME

ED 473 980 EC 309 761

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TITLE	Varied Opinions on How To Report Accommodated Test Scores: Findings Based on CTB/McGraw-Hill's Framework for Classifying Accommodations. Synthesis Report.
INSTITUTION	National Center on Educational Outcomes, Minneapolis, MN.; Council of Chief State School Officers, Washington, DC.; National Association of State Directors of Special Education, Alexandria, VA.
SPONS AGENCY	Special Education Programs (ED/OSERS), Washington, DC.
REPORT NO	NCEO-49
PUB DATE	2003-04-00
NOTE	26p.
CONTRACT	H326G000001
AVAILABLE FROM	National Center on Educational Outcomes, University of Minnesota, 350 Elliott Hall, 75 East River Rd., Minneapolis, MN 55455 ($10). Tel: 612-624-8561; Fax: 612-624-0879; Web site: http://education.umn.edu/NCEO. For full text: http://education.umn.edu/NCEO/OnlinePubs//Synthesis49.html.
PUB TYPE	Reports - Research (143)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	Academic Accommodations (Disabilities); Accessibility (for Disabled); *Administrator Attitudes; *Disabilities; *Educational Assessment; Elementary Secondary Education; Inclusive Schools; National Surveys; *Standardized Tests; *Test Validity; *Testing Accommodations

ABSTRACT

This paper reports on a survey of the perceptions of 86 state-level educational assessment personnel or other professionals involved in educational assessment regarding different ways in which test scores are influenced by accommodations for participants with disabilities and how scores obtained under accommodated conditions should be treated in reporting. It notes three general options: (1) report all scores in the aggregate (i.e., do not differentiate between accommodated and non-accommodated test scores; (2) report accommodated scores separately; and (3) report accommodated scores both in the aggregate as well as separately. A survey instrument asked participants to classify accommodations into one of three categories distinguished by the degree to which accommodations influence performance. Accommodations were also classified as either presentation accommodations, response accommodations, setting accommodations, or timing accommodations. The study found a relatively high degree of disagreement among participants on the degree to which various accommodations alter test constructs and thus should be treated differently. Accommodations seen as least likely to influence performance were small group administration, use of a large print answer sheet, special lighting, or flexible scheduling. Accommodations seen as most likely to influence performance included provision of extra time, test administration at home, use of a calculator for computations, or use of a spell checker. The paper suggests that accommodations be viewed as a means of establishing optimal testing conditions rather than as a means of "leveling the playing field." Appendices include the survey protocol and detail on level of agreement for each accommodation. (Contains 12 references,

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3 tables, and 4 figures.) (DB)

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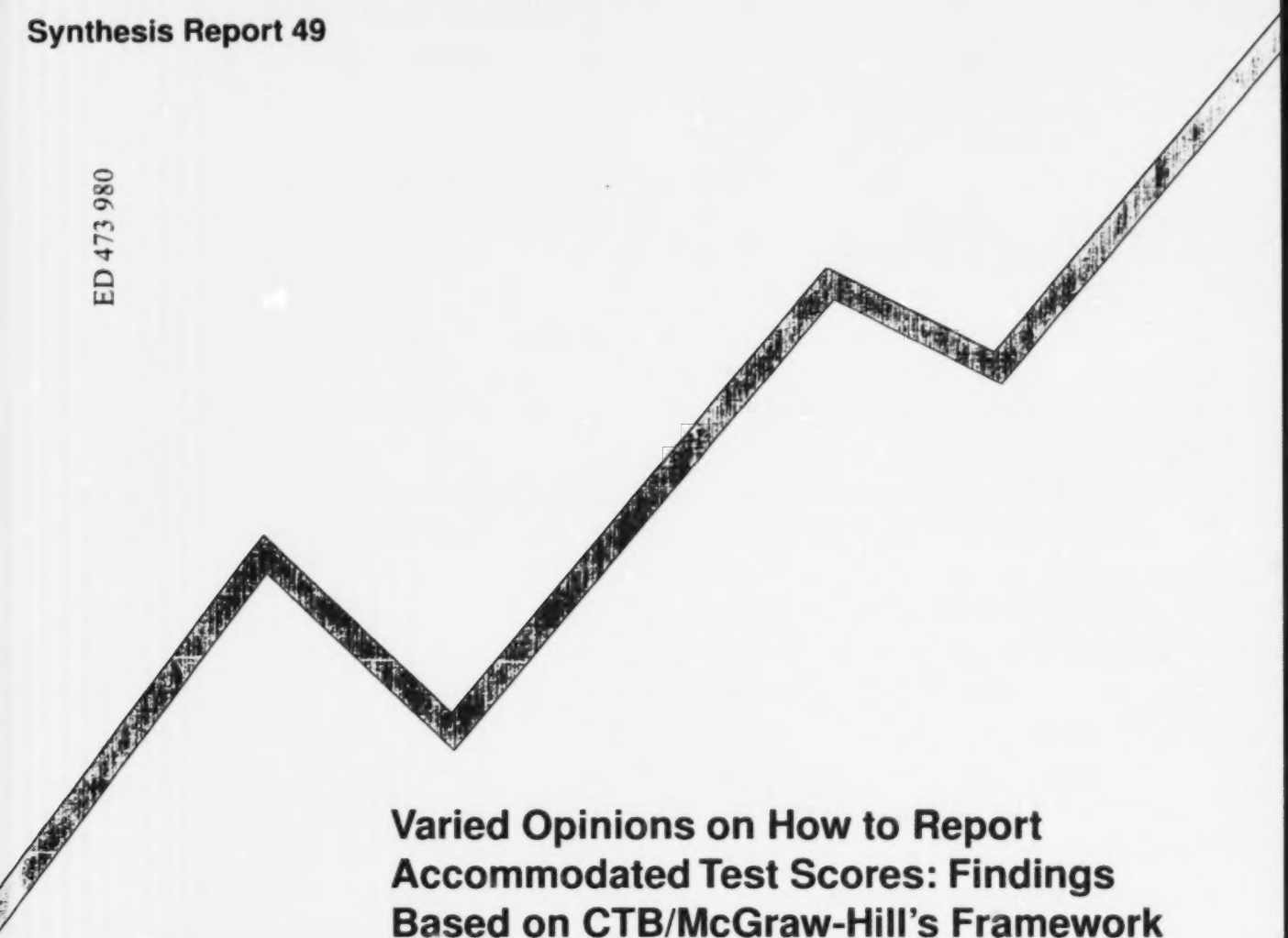

Varied Opinions on How to Report Accommodated Test Scores: Findings Based on CTB/McGraw-Hill's Framework for Classifying Accommodations

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Synthesis Report 49

Varied Opinions on How to Report Accommodated Test Scores: Findings Based on CTB/McGraw-Hill's Framework for Classifying Accommodations

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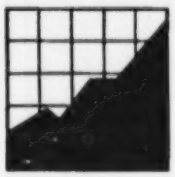
Bielinski, J., Sheinker, A., & Ysseldyke, J. (2003). *Varied opinions on how to report accommodated test scores: Findings based on CTB/McGraw-Hill's framework for classifying accommodations* (Synthesis Report 49). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.



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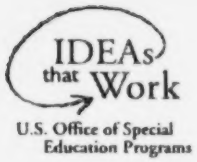

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Executive Summary

Policies intended to increase the participation of students with disabilities in state and local assessment systems have been in full force for several years. Test accommodations constitute the most frequently used alternative to increase their participation rates. Because accommodations continue to be so widely applied despite the limited amount of empirical research available demonstrating how they affect test scores, it is necessary that sound, rational decisions be made about the use of accommodated test scores.

One challenge confronting state education agencies is to determine the most appropriate way to report the test scores of those students receiving accommodations. There are three general options:

1. Report all scores in the aggregate (i.e., do not differentiate between accommodated and non-accommodated test scores)
2. Report accommodated scores separately
3. Report accommodated scores both in the aggregate as well as separately

Each option reflects different beliefs about how accommodations influence test scores.

The future of accommodations research depends, in part, on the perceived need for the research as well as continued availability of the resources to conduct such research. The opinions of the stakeholders, particularly those influencing policy on how to report scores from accommodated tests, may provide a barometer of the perceived need for further research.

The present study is a survey of the perceptions held by people familiar with policy or research on the way in which test scores are influenced by accommodations and how scores obtained under accommodated conditions are to be treated in reporting. The results show that the extent of agreement about how accommodated scores should be treated depends on the accommodation. The study also shows how deep-seated beliefs lead some respondents to consider almost no accommodation as changing the construct, whereas other respondents consider almost all accommodations as influencing the construct being measured.

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Overview

Policies intended to increase the participation of students with disabilities in state and local assessment systems have been in full force for several years. Test accommodations constitute the most frequently used alternative to increase participation rates of these students. The widespread use of test accommodations has spawned a flurry of empirical studies to explore questions such as what accommodations should be used and with whom. It will be some time before answers to these questions are sufficiently refined to enable strong conclusions about the benefits and drawbacks of test accommodations. In the meantime the use of accommodations flourishes (American Council on Education, 2002; Thompson & Thurlow, 2001). Because accommodations continue to be so widely applied despite the limited amount of empirical research available demonstrating how they affect test scores (Thompson, Blount, & Thurlow, 2002), it is necessary that sound, rational decisions be made about the usability of accommodated test scores.

One challenge confronting state education agencies is to determine the most appropriate way of reporting test scores for students receiving accommodations. There are three general options:

1. Report all score in the aggregate (i.e., do not differentiate between accommodated and non-accommodated test scores)

2. Report accommodated scores separately

3. Report accommodated scores both in the aggregate as well as separately

Each option reflects different beliefs about how accommodations influence test scores. Option 1 implies that the accommodated test scores measure the same construct in the same way as non-accommodated test scores. Option 2 implies that the accommodation changes the meaning of the test score, therefore the scores must be considered separately. Option 3 implies uncertainty about how the accommodation influences test scores, if at all; the third option reflects the reality of test accommodations research – we simply do not have definitive evidence about how each accommodation or combination of accommodations influences test scores. Options 1 and 2 may represent personal biases more than definitive empirical evidence.

There is some evidence that the opinions of people who are familiar with this issue vary, even to the point that the opinions are in direct opposition. State guidelines about how to report accommodated test scores provide evidence of this. The lists of approved and non-approved accommodations in each state show that an accommodation that is approved in one state may not be approved in another state, even when the same assessment is used (Thurlow, House, Boys, Scott, Ysseldyke, 2000; Thurlow, Thompson, Lazarus, & Robey, 2002). Federal regulations that require states to report test scores for students with disabilities in the aggregate and separately, in combination with the high stakes placed on the scores, makes this reporting issue

particularly salient. Furthermore, the conflict between what measurement theory regards as essential for test score comparisons and the provision that any-and-all accommodations must be made available to students with a disability compounds the issue (Heumann & Warlick, 2000), raising tensions and uncertainty.

The future of accommodations research depends, in part, on the perceived need for the research as well as continued availability of the resources to conduct such research. The opinions of the stakeholders, particularly those influencing policy on how to report scores from accommodated tests, may provide a barometer of the perceived need for further research. For instance, one would expect little perceived need if all of the people influencing policy decisions shared the same opinion on how to treat test scores obtained under non-standard conditions. On the other hand, if the opinions of this stakeholder group varied, then a need for more research, or at least more discussion of the issues, would be indicated. The extent of need for more research likely varies by the type of accommodation. Those accommodations on which there is little agreement about perceived effects on test score interpretation deserve most of our attention.

The present study is a survey of the perceptions held by people familiar with policy or research on the way in which test scores are influenced by accommodations and how scores obtained under accommodated conditions are to be treated. Rather than asking participants directly about how they believe an accommodation influences test score interpretation, the study asked participants to classify accommodations into one of three categories that can be distinguished by the degree to which accommodations influence performance using a classification scheme developed by CTB/McGraw-Hill.

Methods

Instrument

In an effort to create guidelines for using test results from standardized tests administered under non-standard conditions, CTB/McGraw-Hill created a framework for classifying accommodations (CTB/McGraw-Hill, 2000). Accommodations were framed according to their expected influence on student performance, and then according to how the results should be reported. Category 1 accommodations are not expected to influence test performance in a way that would alter the characteristics of the test. According to the CTB/McGraw-Hill document, test scores for students receiving such accommodations should be interpreted as test scores from standard administrations, and these scores should be aggregated with the scores of standard administrations. According to CTB/McGraw-Hill, Category 2 accommodations are expected to have some influence on test performance, but should not alter the construct the test was designed to measure. Category 2 accommodations may boost test performance; therefore, the type of accommodation

used should be considered when interpreting the test scores. Scores obtained under Category 2 accommodations can be aggregated with scores obtained under standard conditions, but the scores should also be reported separately and the number and percent of students using such accommodations should be clearly indicated along with summary statistics. Category 3 accommodations, as classified by CTB/McGraw-Hill, are expected to alter the construct that the test was designed to measure. In the absence of research demonstrating otherwise, scores obtained under Category 3 accommodations should be interpreted in light of how the accommodation is thought to influence performance. Some of the Category 3 accommodations are content specific, for example receiving the read-aloud accommodation on a reading test, or using a calculator on math computation items. Score interpretation should consider the accommodation-content combination and whether the accommodation changes what the tests were designed to measure. According to CTB/McGraw-Hill, scores from Category 3 accommodations should be reported in aggregated and disaggregated forms, and the number and percent of students using such accommodations should be clearly indicated along with summary statistics.

Using the three categories of accommodations, a survey was created in which participants were asked to assign each of 44 accommodations to one of the three categories. The categories were designed to be mutually exclusive, but they might not have been exhaustive.

Participants

Participants chosen for this study were familiar with accommodations research or state policies on the use of test accommodations. A survey was sent to each of the 50 state assessment directors, each state special education director, and to individuals who have presented research on test accommodations or have published accommodations research. One hundred and thirty surveys were mailed initially, and also re-mailed to those who had not responded to the first mailing. In all, we obtained responses from 86 individuals (66% of those sent). Of these, 63 (73%) provided a single rating for each accommodation, and 77 (89%) provided a single rating for at least 40 of the 44 accommodations.

Of the 86 respondents, 60 were state department of education personnel, either assessment directors or special education directors. Eleven respondents were involved in accommodations research or in drafting policy guidelines on the use of accommodations. The other 11 respondents were practitioners or described themselves by checking multiple categories.

Accommodations

The accommodations used in this survey were chosen to be representative of the accommodations used in practice. This list of 44 accommodations was not meant to be exhaustive. A

popular classification scheme was used to cluster the accommodations and to ensure that these accommodations represented different aspects of test administration that could be accommodated (Thurlow, Ysseldyke, & Silverstein, 1993). The four categories were: (1) presentation, (2) response, (3) setting, and (4) timing. According to this scheme, accommodations can be distinguished by that aspect of the standard administration that is altered by the accommodation. For instance, presentation accommodations represent accommodations that alter the standard presentation of the test - presenting test material in Braille is a common example of a presentation accommodation. Response accommodations alter the way in which examinees respond to test items - marking the answer in the test booklet as opposed to a bubble sheet would be an example of a response accommodation. Setting accommodations usually refer to changes in the typical size of the group to which the test is administered or the location the test is taken - taking the test in a small group is an example of a setting accommodation. Timing accommodations typically refer to allowing the examinee extra time to complete the test. There were 20 presentation accommodations, 14 response accommodations, 5 setting accommodations, and 5 timing accommodations (see Appendix A).

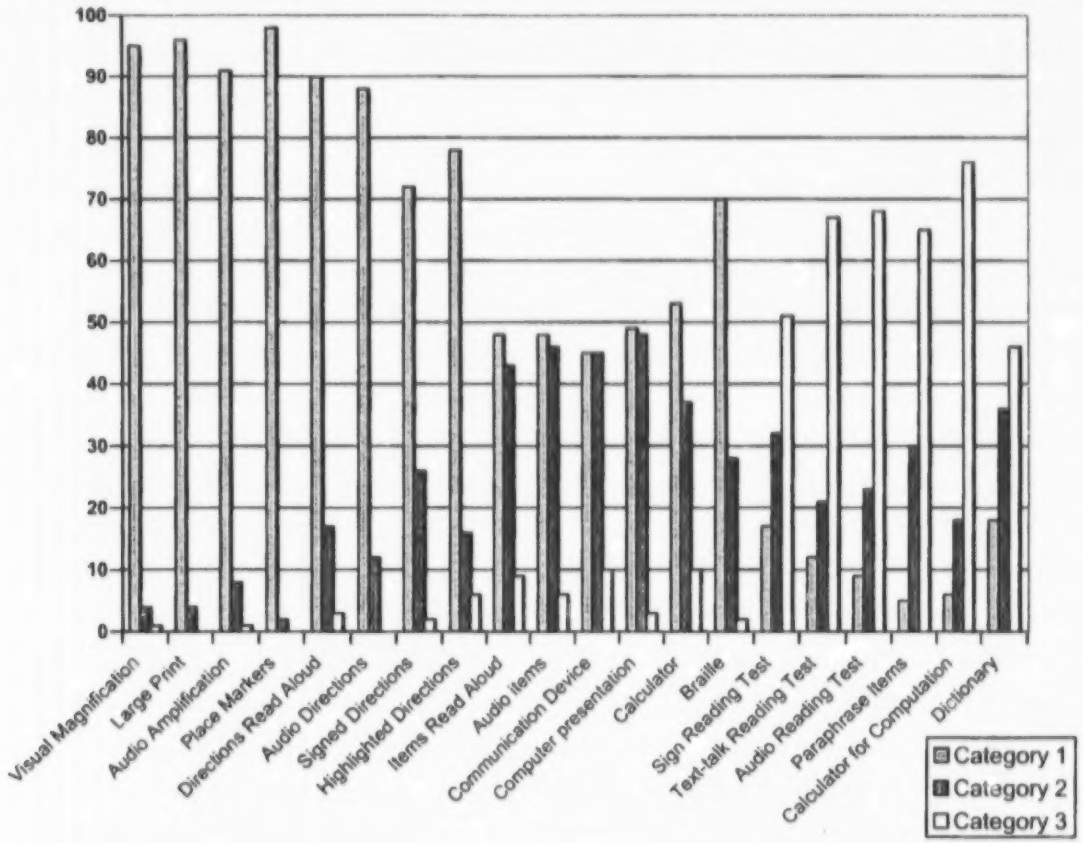
Results

The categories into which respondents placed each of the 44 accommodations in the CTB/McGraw-Hill list were examined by creating frequency distributions. These were plotted as bar graphs according to the four category classification scheme (presentation, response, setting, timing).

Presentation Accommodations

Figure 1 displays the results for the 20 presentation accommodations. As is evident in the bar graph, there was little variability in the classification of the first four presentation accommodations (visual magnification, large print, audio amplification, and place markers); most of the respondents (over 90%) chose Category 1 for these four accommodations. The next four accommodations all represent ways of presenting test directions (read aloud, audio, signed, and highlighted). At least 70% of the respondents also chose Category 1 for these accommodations. The CTB/McGraw-Hill category chosen by respondents for the remaining presentation accommodations varied much more. Most respondents classified items read aloud, audio items, communication device, and computer presentation into either Category 1 or Category 2. More than 50% of the respondents classified accommodations representing oral presentation of the reading test and providing a calculator for a math computation test as Category 3.

Figure 1. Frequency Distribution of Category Ratings for Presentation Accommodations



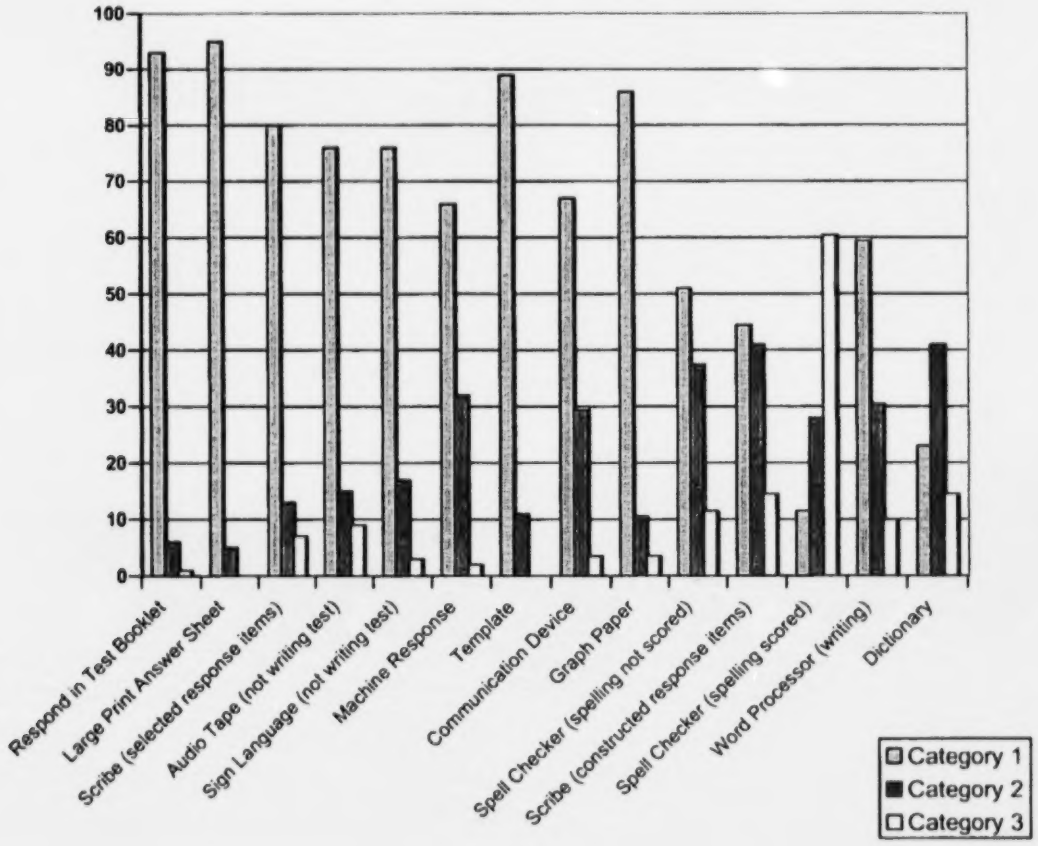
Response Accommodations

Figure 2 displays the results for the 14 response accommodations. More than 85% of the respondents placed responding in the test booklet, large print, using a template, and using graph paper into Category 1. There was little agreement as how to treat the response accommodations like scribes and spell checkers used when spelling was not scored. The use of a spell checker when spelling was scored was more consistently categorized by respondents into Category 3. Still, some respondents did place this accommodation into Category 2, and some placed it in Category 1.

Setting Accommodations

Figure 3 displays the distribution of responses to the setting accommodations. Respondents almost unanimously agreed that taking a test alone or in a small group, or the use of adaptive furniture

Figure 2. Frequency Distribution of Category Ratings for Response Accommodations



or special lighting or acoustics did not alter the meaning of the score, and therefore could be placed in Category 1, where scores should simply be reported in the aggregate as though they are standard scores. The accommodation of taking the test at home or in a care facility received less consistent placement into Category 1. Roughly one-third of the respondents placed this accommodation into Category 2.

Timing Accommodations

Figure 4 displays the distribution of responses to the timing accommodations. Respondents unanimously agreed that the first two accommodations (additional breaks and flexible scheduling) do not alter the meaning of test scores and therefore belong in Category 1. These represent scheduling accommodations that do not result in extra testing time. The timing accommodation of taking the test over several days, but still not resulting in extra time, showed greater variability in responses. About 55% of the respondents placed this accommodation into Category 1, 35%

Figure 3. Frequency Distribution of Category Ratings for Setting Accommodations

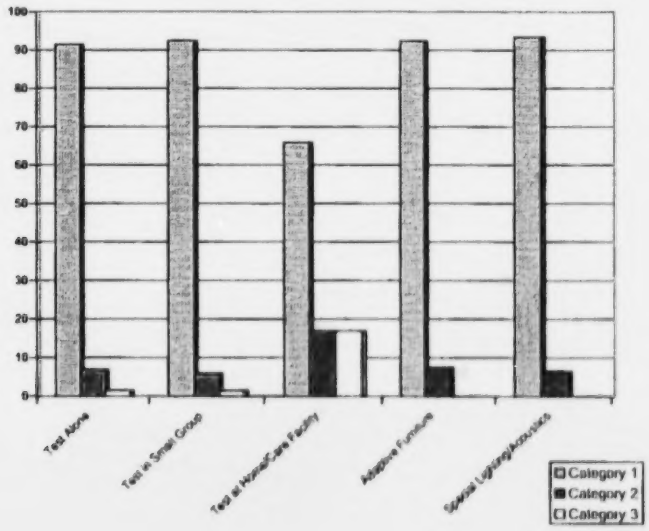
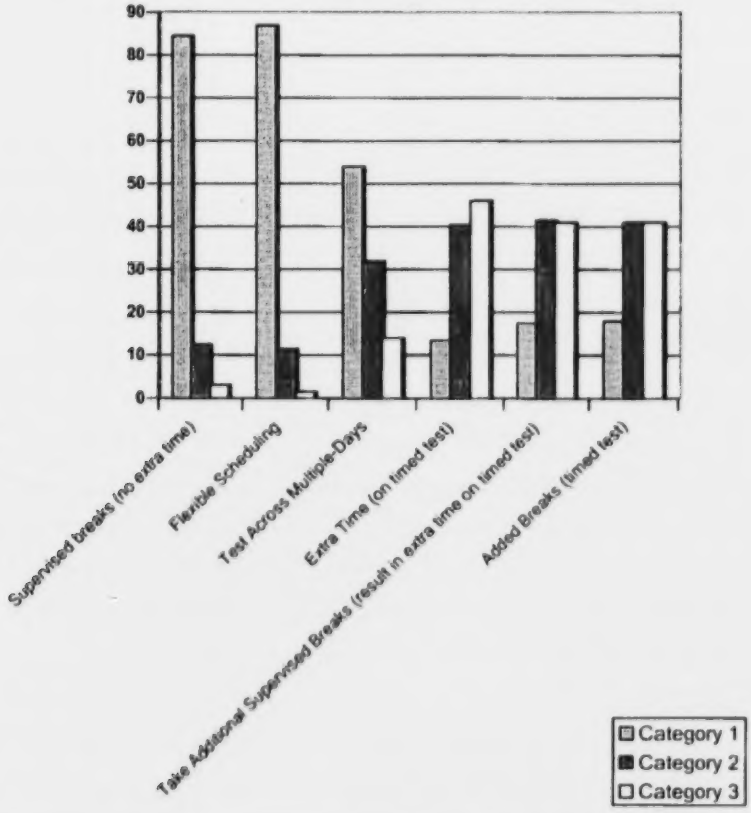


Figure 4. Frequency Distribution of Category Ratings for Timing Accommodations



placed it into Category 2, and 15% placed it into Category 3. The majority of respondents placed the timing accommodations of extra time on a timed test and extra breaks on a timed test into either Category 2 or Category 3.

Agreement Among Respondents

Table 1 is a count of the accommodations by level of agreement. Low agreement was defined as less than 50% of the respondents placing the accommodation into the same category, moderate agreement was defined as 50 to 89% of respondents choosing the same category, and high agreement was defined as 90% or more choosing a particular category for an accommodation. There was low agreement on 14 of the accommodations, moderate agreement on 17, and high agreement on 13 of the accommodations. Specific accommodations by level of agreement among participants can be found in Appendix B.

Table 1. The Number and Percent of Accommodations by Level of Agreement

Agreement	Number	Percent
Low	14	32
Moderate	17	39
High	13	29

Table 2 is a list of the accommodations in which more than 90% of the respondents indicated that the accommodation belonged in Category 1. Included in this list are three presentation accommodations, three response accommodations, and four setting accommodations. None of the timing accommodations were agreed upon by 90% of respondents as belonging to Category 1.

Individual Bias

The degree to which some individuals favor accommodations regardless of the type of accommodation was analyzed by examining categorizations of accommodations that alter some feature of the test directly involved in test performance and that therefore might be expected to change the construct of the test. For instance, oral presentation during a reading test is perceived by some respondents to alter what the test was intended to measure, reading skills. Six accommodations of this type were identified (see Table 3) and the percentage of respondents choosing Categories 1 or 2 calculated. Twenty-five percent of the respondents indicated that the scores obtained from using a calculator on a computation test should be treated as Category 1 or Category 2, and 58% indicated that scores obtained with extra time on a timed test should be treated as Category 1 or Category 2.

Table 2. Accommodations That Respondents Unanimously Agreed Belong in Category 1

Accommodation	Percent Category 1
Presentation	
Magnifying equipment	95
Large-print	96
Audio amplification	92
Response	
Maintain place	98
Mark responses in test booklet	93
Mark responses on large-print answer document	95
Setting	
Take test alone	92
Take test in small group	93
Use adaptive furniture	93
Use special lighting	94

Table 3. Percent of Respondents Assigning Category 1 or 2 to Accommodations That Alter a Feature of the Test Critical to Performance

	Percent Category 1 or 2
Use text-talk converter on a reading test	32
Have stimulus material read on a reading test	31
Have stimulus material paraphrased	33
Use calculator on a mathematics test	25
Use spell checker on a writing test	38
Use extra time on a timed test	58

Discussion

The findings in this study point to the need for further dialogue and more research on test accommodations. The opinions of those who influence policy and who are familiar with test accommodations vary too much to ignore. When one group believes that an accommodation alters the construct and thus should be treated differently, while another group believes that the accommodation maintains the integrity of the scores, there is a need for further discussion. However, it is unlikely that discussion without empirical evidence will lead to greater agreement.

Even empirical evidence may not be enough to sway opinion. This survey seems to verify that beliefs about how to treat accommodated scores run deep. The fact that nearly everyone believes

that the accommodations listed in Category 1 do not affect test scores in a way that would alter the meaning of the scores suggests that the field should not devote precious resources to further empirical investigation of these.

Although there does not appear to be a single theme underlying this list of accommodations, it would appear that several of the accommodations were intended primarily for students with either a physical or a sensory disability. It is not surprising to find accommodations meant for students with physical and sensory disabilities on this list. The distinction between the disability and the purpose of the assessment is clear for students with physical and sensory disabilities. However, as Phillips (1994) pointed out, this distinction is not so clear for students with learning disabilities. The idea of accommodating students with physical disabilities resonates so well with so many of the people familiar with test accommodations that it is often used as a metaphor to illustrate the purpose of test accommodations for students with other disabilities. For example, Elliott, Kratochwill, McKevitt, Schulte, Marquart, and Mroch (1999) use the metaphor of an access ramp to illustrate how test accommodations work. Without an access ramp a student using a wheel chair would not be able to "access" the test. They argue that accommodations are a means to reduce the barrier of access skills. Access skills refer to the test-taking skills required to demonstrate what one knows and can do (e.g., attention and the ability to read). Presumably access skills, although necessary, are incidental to the construct the test was designed to measure. However, even the notion of access skills becomes murky for many accommodations. For instance, should reading math word problems be considered incidental to the construct of math problem solving?

Another accommodation that received almost unanimous assignment to Category 1 is small group administration. An accommodation is defined as an alteration to standard test administration. Each of the essential aspects of standard administration should be described in the test procedures manual. Furthermore, one would assume that all procedures essential to standard administration are in place during the field-testing. One may wonder whether group size is defined in the test procedures manuals, and whether a uniform sized group is used at every site in the field test. If the two preceding conditions are not met, one could argue that small group administration does not constitute a testing accommodation. The decision to treat small-group administration as an accommodation is particularly important because it is one of the most frequently used accommodations.

The extent of the variability in the respondents' perceptions to this survey may simply reflect the differences in the opinions researchers have regarding the way in which the effectiveness of an accommodation is demonstrated. Much of the recent accommodations research has dealt with the extent to which an accommodation boosts test performance (Elliott, Kratochwill, McKevitt, Schulte, Marquart, & Mroch, 1999; Fuchs, Fuchs, Eaton, Hamlett, & Karns, 2000; Thompson, Blount, & Thurlow, 2002; Tindal, Helwig, & Hollenbeck, 1999). Although a performance

boost may be necessary to conclude that an accommodation was effective, it is not sufficient to conclude that the accommodation was valid. Overemphasizing a test score boost may have led people less familiar with measurement theory to conclude that an accommodation is valid if it boosts performance. It might also explain why IEP teams tend to over-accommodate; IEP teams may try any accommodation that may boost performance. More research is needed to examine whether accommodated tests alter the validity of the scores. Furthermore, accommodations research on performance boost should always acknowledge that a boost does not imply that the accommodated scores are a valid measure of the construct.

The variability in the perceptions about how accommodated scores should be treated may be due in part to the lack of a sound measurement model for accommodations. The justification for accommodations is based largely on the belief that accommodations level the playing-field. What does it mean to level the playing-field? For an accommodation to level the playing-field, it must be assumed that standard testing conditions impinge on the performance of students with disabilities. Performance here is considered in the maximal sense. Test score theory posits a "true" score, which is defined as the average performance over repeated testing with the same pool of items under the same conditions. However, accommodations change those conditions; therefore, the notion of true score no longer applies. It is beyond the scope of this paper to introduce a new theoretical conceptualization of test accommodations, but it suffices to say that it may be more logical to view accommodations as a means of establishing optimal testing conditions. Regardless of precisely how accommodations are perceived, there is a need for applying a testable measurement model to this concept.

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Appendix A

Survey Protocol

Presentation Accommodations	C1	C2	C3
1. Use visual magnifying equipment			
2. Use a large-print edition of the test			
3. Use audio amplification equipment			
4. Use markers to maintain place			
5. Have directions read aloud			
6. Use a tape recording of directions			
7. Have directions presented through sign language			
8. Use directions that have been marked with highlighting			
9. Have stimulus material, questions, and/or answer choices read aloud, except for a reading comprehension test			
10. Use a tape-recorder for stimulus material, questions, and/or answer choices, except for a reading comprehension test			
11. Communication devices, (e.g., test-talk converter), except for a reading comprehension test			
12. Have computer presentation of text that is not otherwise available for computer presentation			
13. Use a calculator or arithmetic tables, except for a mathematics computation test			
14. Use Braille or other tactile form of print			
15. On a reading comprehension test, have stimulus material, questions, and/or answer choices presented through Sign Language			
16. On a reading comprehension test, use a text-talk converter			
17. On a reading comprehension test, use a tape recording of stimulus material, questions, and/or answer choices			
18. Have directions, stimulus material, questions, and/or answer choices paraphrased			
19. For mathematics computation test, use a calculator or arithmetic tables			
20. Use a dictionary			
Response Accommodations	**C1**	**C2**	**C3**
1. Mark responses in test booklet			
2. Mark responses on large-print answer document			
3. For selected-response items, indicate responses to a scribe			
4. Record responses on audio tape, except for constructed-response writing tests			
5. For selected-response items, use sign language to indicate response except for constructed-response writing tests			
6. Use a computer, typewriter, Braille writer, or other machine (e.g., communication board) to respond			
7. Use template to maintain place for responding			
8. Indicate response with other communication devices (e.g., speech synthesizer)			
9. Use graph paper to align work			

Response Accommodations	C1	C2	C3
10. Use spelling checker except with a test for which spelling will be scored			
11. For constructed response items, dictate responses to a scribe			
12. For a test for which writing will be scored, use a spelling checker			
13. For a test for which writing will be scored, respond on a word processor without a spelling checker			
14. Use a dictionary			
Setting Accommodations	**C1**	**C2**	**C3**
1. Take the test alone or in a study carrel with supervision			
2. Take the test with a small group			
3. Take the test at home or in a care facility with supervision			
4. Use adaptive furniture			
5. Use special lighting and/or acoustics			
Timing/Scheduling Accommodations	**C1**	**C2**	**C3**
1. Take additional supervised breaks that do not result in extra time			
2. Have flexible scheduling (e.g., test at a particular time of day)			
3. Take test across multiple-days (without resulting in extra time) for a test designed to be taken on a single day			
4. Use extra time for a timed test			
5. Take additional supervised breaks that result in extra time for any timed test			

Appendix B

Accommodation by Level of Agreement Among Participants

Bold-faced font indicates that the accommodation fell into Categories 2 or 3, normal font indicates a Category 1 accommodation.

Level of Agreement		
High	**Moderate**	**Low**
Presentation		
Visual magnifying	Directions read aloud	**Stimulus material, questions and/or answer choices read aloud**
Large-print edition	Directions read via audio recorder	**Stimulus material, questions and/or answer choices via audio recorder**
Audio amplification	Directions marked with highlighting	**Stimulus material, questions and/or answer choices read aloud, except for reading comprehension test**
Marker to maintain place	Directions presented via sign language	**Communication devises (e.g. text-talk converter) for stimulus material, except for reading comprehension test**
Audio recording of stimulus material etc. on reading comprehension test	Braille	**Computer presentation of text not otherwise available for computer presentation**
Directions, stimulus material, questions, and/or answer choices paraphrased	**Sign language for stimulus material etc. on reading comprehension test**	Use calculator, except for math computation test
Use calculator on math computation test	**Text-talk converter on a reading comprehension test**	
Use dictionary		
Response		
Mark responses in test booklet	For selected-response items, indicate responses to scribe	Use computer, typewriter, Braille writer to respond
Mark response on large-print answer document	Record responses on audio-recorder, except for writing test	Indicate response with other communication devise
	Use template to maintain place for responding	Use spell checker except with a test for which spelling will be scored
	Use sign language for response, except for writing tests	**For constructed-response, dictate response to scribe**
	Use graph paper to align work	For test in which writing will be scored, respond on word processor WITHOUT spell check
	For test in which writing will be scored, respond on word processor with spell check	
	Use a dictionary	

Setting		
Take test alone with supervision		Take test at home or other facility away from school
Take test in small group		
Use adaptive furniture		
Use special lighting or acoustics		
Timing/Scheduling		
	Take additional supervised breaks that do not result in extra time	Take test across multiple days (without resulting in extra time) for a test designed to be taken in a single day
	Have flexible scheduling	
	Use extra time for a timed test	
	Take additional supervised breaks that result in extra time for any time test	

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